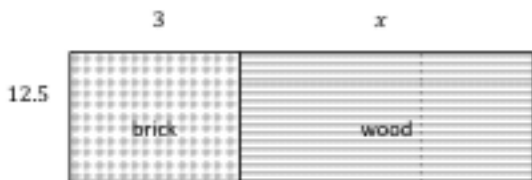
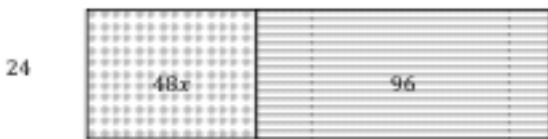


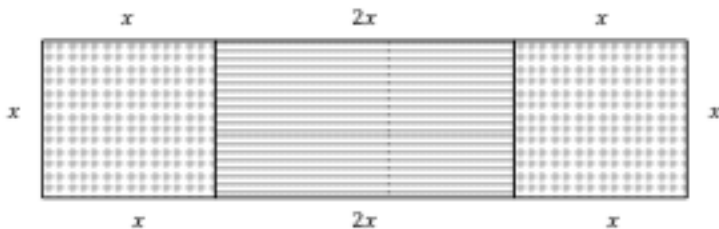
4. Yolanda is building a patio in her back yard. She is interested in using both brick and wood for the flooring of the patio. Below is the plan she has created for the patio. All measurements are in feet.
- a. Create an expression to represent the area of the patio.



- b. Yolanda's husband develops another plan for the patio because he prefers the patio to be much wider than Yolanda's plan. Determine the length of the brick section and the length of the wood section. Then use the dimensions to write an expression that represent the area of the entire patio.

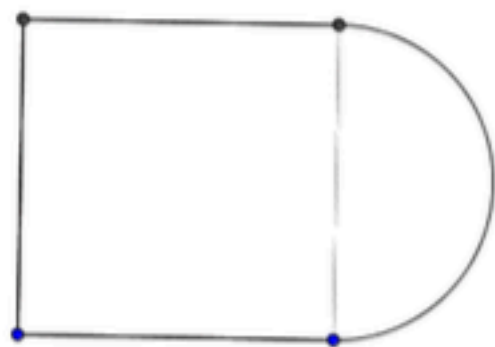


5. The landscaper hired for Yolanda's lawn suggests a patio that has the same measure of wood as it has brick.



- a. Express the perimeter of the patio in terms of  $x$  first using addition, and then using multiplication.
- b. Use substitution to determine if your expressions are equivalent. Explain.

4. A play court on the school playground is shaped like a square joined by a semi-circle. The perimeter around the entire play court is 182.8 ft., and 62.8 ft. of the total perimeter comes from the semi-circle.



- a. What is the radius of the semi-circle?
- b. The school wants to cover the play court with sports court flooring. Using 3.14 for  $\pi$ , how many square feet of flooring does the school need to purchase to cover the play court?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Write and solve each of the following linear equations.

- a. Ofelia has a certain amount of money. If she spends \$12, then she has  $\frac{1}{5}$  of the original amount left. How much money did Ofelia have originally?

- b. Three consecutive integers have a sum of 234. What are the three integers?

- c. Gill is reading a book that has 276 pages. He has already read some of it last week. He plans to read 20 pages tomorrow. By then, he will be  $\frac{2}{3}$  of the way through the book. How many pages did Gil read last week?

3. Dots can be arranged in rectangular shapes like the one shown below.



Figure 1



Figure 2

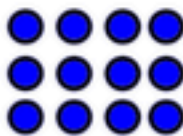


Figure 3

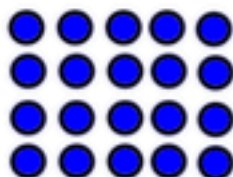


Figure 4

- a. Assuming the trend continues, draw the next three shapes in this particular sequence of rectangles. How many dots are in each of the shapes you drew?

The numbers that represent the number of dots in this sequence of rectangular shapes are called rectangular numbers. For example, 2 is the first rectangular number and 6 is the second rectangular number.

- b. What is the fiftieth rectangular number? Explain how you arrived at your answer.

- c. Write a recursive formula for the rectangular numbers.

- d. Write an explicit formula for the rectangular numbers.

- e. Could an explicit formula for the  $n^{\text{th}}$  rectangular number be considered a function? Explain why or why not. If yes, what would be the domain and range of the function?